

1. A particle's velocity is given in ft/sec by the equation $v(t) = 6t^2 - 6t - 12$, find:
- a) the displacement of the particle in the first 4 seconds
 - b) the total distance traveled by the particle on the same interval as in part a

2. Approximate $\int_0^4 x^2 - 3 \, dx$ using:
- a) left endpoints with 8 sub-intervals
 - b) right endpoints with 8 sub-intervals
 - c) midpoint rule with 8 sub-intervals
 - d) trapezoid rule using 8 sub-intervals

Evaluate each definite integral by hand:

3. $\int_1^2 \frac{x-2}{x} dx$

4. $\int_0^{\frac{\pi}{4}} \cos(x) dx$

Evaluate each indefinite integral:

5. $\int 2x^3 + \sec x - \frac{3}{x^2} dx$

6. $\int \frac{4}{x} + \csc x \cot x + 7 dx$

7. $\int \frac{x^4 - 3x^2 - 5}{\sqrt{x}} dx$

8. $\int 4e^x + \tan(x) - \sec^2(x) dx$

9. Given: $\int_1^4 f(x) dx = 2$ & $\int_1^4 g(x) dx = 10$

Find: $\int_1^4 3f(x) - g(x) dx$

10. Given: $\int_{-2}^1 f(x) dx = 2$ & $\int_1^3 f(x) dx = 6$

Find: $\int_3^{-2} f(x) dx$